

CLAIMS

What is claimed is:

1. An isolated polynucleotide comprising:
 - (a) a first nucleotide sequence encoding a first polypeptide having starch branching enzyme IIb activity, wherein the amino acid sequence of the first polypeptide and the amino acid sequence of SEQ ID NO:4 have at least 95% identity based on the Clustal alignment method,
 - (b) a second nucleotide sequence encoding a second polypeptide having starch branching enzyme IIb activity, wherein the amino acid sequence of the second polypeptide and the amino acid sequence of SEQ ID NO:2 have at least 97% identity based on the Clustal alignment method, or
 - (c) the complement of the first or second nucleotide sequence.
2. The isolated polynucleotide of Claim 1, wherein the first polypeptide comprises the amino acid sequence of SEQ ID NO:4, and wherein the second polypeptide comprises the amino acid sequence of SEQ ID NO:2.
3. The isolated polynucleotide of Claim 1, wherein the first nucleotide sequence comprises the nucleotide sequence of SEQ ID NO:3, and wherein the second nucleotide sequence comprises the nucleotide sequence of SEQ ID NO:1.
4. A chimeric gene comprising the polynucleotide of Claim 1 operably linked to a regulatory sequence.
5. A vector comprising the polynucleotide of Claim 1.
6. An isolated polynucleotide fragment comprising a nucleotide sequence containing at least 30 nucleotides, wherein the nucleotide sequence containing at least 30 nucleotides is comprised by the polynucleotide of Claim 1.
7. The fragment of Claim 6, wherein the nucleotide sequence containing at least 30 nucleotides contains at least 40 nucleotides.
8. The fragment of Claim 6, wherein the nucleotide sequence containing at least 30 nucleotides contains at least 60 nucleotides.
9. A method for transforming a cell comprising transforming a cell with the polynucleotide of Claim 1.
10. A cell comprising the chimeric gene of Claim 4.
11. A method for producing a transgenic plant comprising transforming a plant cell with the polynucleotide of Claim 1 and regenerating a plant from the transformed plant cell.
12. A plant comprising the chimeric gene of Claim 4.
13. A seed comprising the chimeric gene of Claim 4.
14. An isolated polypeptide having starch branching enzyme IIb activity, wherein the polypeptide comprises:

5

- (a) a first amino acid sequence, wherein the first amino acid sequence and the amino acid sequence of SEQ ID NO:4 have at least 95% identity based on the Clustal alignment method, or
- (b) a second amino acid sequence, wherein the second amino acid sequence and the amino acid sequence of SEQ ID NO:2 have at least 97% identity based on the Clustal alignment method.

15. The polypeptide of Claim 14, wherein the first amino acid sequence comprises the amino acid sequence of SEQ ID NO:4, and wherein the second amino acid sequence comprises the amino acid sequence of SEQ ID NO:2.